

# High efficiency Thermo-Electric power generator

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## Description

Thermo-Electric (TE) power generation is an attractive method for the direct conversion of thermal energy into electrical one. Both the TE material properties and the power generator architecture play a fundamental role in the achievement of high energy conversion efficiencies. The paper focuses on the TE module architecture design, as well as on the sub-components manufacturing and assembly.

Segmented TE power generators, characterized by a counter-current arrangement of the hot and cold gaseous streams, and a catalytic combustion chamber to ignite an air/fuel mixture, were designed and manufactured (SiC monolith heat exchangers, catalysts and supports for the combustion chamber, system housing). As TE materials, commercial Bismuth Telluride cells were adopted. Pd/NiCrO<sub>4</sub> and Pt/Al<sub>2</sub>O<sub>3</sub> catalysts were investigated to ignite H<sub>2</sub>, CH<sub>4</sub> and H<sub>2</sub>/CH<sub>4</sub> mixtures, at different gas flow rates and fuel ...